Montana Fish, Wildlife & Parks
1400 South 19th Avenue, Bozeman MT, 59718

Draft Environmental Assessment

Range Expansion of Westslope Cutthroat Trout in Several Fishless Streams of Southwest Montana

PART I. PROPOSED ACTION DESCRIPTION

1. Type of Proposed State Action:

The purpose of the proposed action is to transfer native westslope cutthroat trout (WCT; *Oncorhynchus clarkii lewisi*) into currently fishless reaches of several streams in the Big Hole, Madison, Gallatin, and Jefferson River drainages. These fishless reaches have been identified as having suitable habitat for supporting WCT populations. Non-hybridized WCT from nearby streams would be used to populate the fishless reaches of streams identified in this document. Fish introduction would take place through either the transfer of live fish from one or more streams to the fishless stream or through the transfer of fertilized eggs from the donor stream(s). The goal of some of the fish transfers will be to replicate existing small populations of WCT in another stream to reduce the likelihood that an event such as fire or flood could extirpate the source population. The goal of other introductions would be to salvage any remaining cutthroat that are on the brink of extirpation due to competition and/or or hybridization from non-native trout and conservation in their natal habitat is not currently feasible. Stocking these fishless streams with WCT from nearby populations would reduce current threats to WCT which include small population size, limited distribution, and non-native trout competition and hybridization.

2. Agency Authority for the Proposed Action

- Montana Fish, Wildlife & Parks (FWP) is required by law to implement programs that manage sensitive fish species in a manner that assists in the maintenance or recovery of those species, and that prevents the need to list the species under Mont. Code Ann. § 87-5-107 or the federal Endangered Species Act (16 U.S.C. § 1531 *et seq.*). Mont. Code Ann. § 87-1-201(9)(a).

- FWP signed the *Memorandum of Understanding and Conservation Agreement for Westslope Cutthroat Trout and Yellowstone Cutthroat Trout in Montana* (FWP 2007) which provides: "The management goals for cutthroat trout in Montana are to: 1) ensure the long-term, self-sustaining persistence of each of the subspecies distributed across their historical ranges, 2) maintain the genetic integrity and diversity of non-introgressed populations, as well as the diversity of life histories represented by remaining cutthroat trout populations, and 3) protect the ecological, recreational, and economic values associated with each subspecies."

3. Name of Project:

Range Expansion of Westslope Cutthroat Trout in Several Fishless Streams of Southwest Montana

4. Anticipated Timeline: Estimated commencement date, July 2013

Estimated Completion Date: Fall 2017

5. Location Affected by Proposed Action (county, township and range)

Fishless Streams:

Big Hole River Drainage
Dry Creek (Beaverhead Co.) T4S R16W 30, 31 and T4S R17W Sec 35, 36 (2 miles of stream)
Gravelle Creek (Beaverhead Co.) T6S R16W Sec7, 5 and T5S R 16W Sec 34 (2 miles of stream)
Sawmill Creek (Beaverhead Co.) T5S R R16W Sec 7, 8, 18 and T5S R17E Sec 13, 23, 24 (2 miles of stream)
Lost Creek (Beaverhead Co.) T4S R9W Sec 17, 18 and T4S R10W Sec 13, 14, 15 (3 miles of stream)
Mule Creek (Beaverhead Co.) T5S R11W Sec 10, 11 and T4S R11W Sec 2 (1.3 miles of stream)
Skull Creek (Beaverhead Co.) T3N R13W Sec 2, 9, 10, 11, 15 (1 mile)
Deer Creek (Beaverhead Co.) T4S R13 Sec 9, 15, 16. (0.7 mile)
Sheep Creek (Beaverhead Co) T2N R11W Sec 8, 16, 17, 20, T2N R12W Sec 13 (3 miles)
Reservoir Creek (Beaverhead Co.) T2S R12W Sec 6. 7 (2 miles of stream)
Meadow Creek (Beaverhead Co.) T1S R12W Sec 3, 10 (1.5 miles)
Calvert Creek (Beaverhead Co.) T1N R12W Sec 18, T1N R13W Sec 13, 14 (1.2 miles)
Granulated Creek (Silverbow Co.) T2N R11W Sec 35, 36 (2.5 miles)
Hanson Creek (Silverbow Co.) T2N R11W Sec 35, 36 (2 miles)
Unnamed Tributary to Long Tom Creek (Silverbow Co.) T2N R11W Sec 25, 26 (1.5 miles)

Madison River Drainage
Nickerson Creek (Madison County) T9S R1W Sec10-12, (3 miles)
South Fork Cabin Creek (Gallatin County) T11S, R4E, Section 8 (2 miles)

Gallatin River Drainage
Placer Creek (Madison County) T4S, R2E, Section 34 (3 miles)

Jefferson River Drainage
Curly Creek (Madison County) T2S R3W Sec 34, 26, 25 (2.5 miles)
Rock Creek (Jefferson County) T6N R7W Sec 6 and T7N R7W Sec 30, 31 (3 miles)
Porcupine Gulch (Jefferson County) T5N R5W Sec 8, 17 (1 mile)

List of Potential Donor Streams:

Big Hole Drainage
Unnamed tributary to Pioneer Creek
Blind Canyon Creek

Indian Creek
Bailey Creek
Unnamed tributary to Governor Creek
Fox Creek
Sappington Creek

Mono Creek
Sheep Creek
Lacy Creek
Rabbia Creek

Meadow Creek

Jerry Creek
Delano Creek
Spruce Creek

Corral Creek
Tenmile Creek
Bryant Creek
Bear Creek

Madison River Drainage
Wally McClure Creek
Last Chance Creek
Cabin Creek

Gallatin River Drainage
West Fork Wilson Creek
Bostwick Creek
Wild Horse Creek

Jefferson River Drainage
Muskrat Creek
Little Boulder River
Whitetail Creek

6. Project Size: Estimate the number of acres that would be directly affected that are currently:

1. Developed/ residential – 0 acres
2. Industrial – 0 acres
3. Open space – 0 acres
4. Wetland/ riparian – 0 acres
5. Floodplain – 0 acres
6. Irrigated cropland – 0 acres
7. Dry cropland – 0 acres
8. Forestry – 0 acres
9. Rangeland – 0 acres
10. Other –WCT would be introduced into a total of 40.2 miles of stream

7. Map/site plan: See figures below.

8. Listing of any other Local, State or Federal agency that has overlapping or additional jurisdiction:

The U.S. Forest Service, Beaverhead-Deerlodge National Forest, and U.S. Bureau of Land Management (BLM) manage all of the lands surrounding the streams proposed for cutthroat trout introduction with the exception of one section of private property on Lost Creek and an FWP Game Range on Nickerson Creek. The Forest Service, BLM, and FWP are cosigners of a Memorandum of Understanding (MOU) and Conservation Agreement (FWP 2007) between agencies regarding conservation and restoration of WCT in Montana. Management measures outlined in the MOU include the introduction or reintroduction of genetically pure WCT where necessary to aid in their conservation.

(a) Permits: Wild Fish Transfer Permit issued by FWP

(b) Funding:

This project would be implemented by existing FWP Region-3, U.S. Forest Service, and BLM fisheries staff as part of their routine duties and would require no additional funding.

(c) Other Overlapping or Additional Jurisdictional Responsibilities:

Agency Name	Type of Responsibility
U.S. Forest Service, Beaverhead-Deerlodge National Forest	Management of aquatic and terrestrial habitat within the streams proposed for WCT introduction
U.S.D.I Bureau of Land Management	Management of aquatic and terrestrial habitat within the streams proposed for WCT introduction

9. Narrative summary of the proposed action or project including the benefits and purpose of the proposed action:

Background

Westslope cutthroat trout, Montana's state fish, have declined in abundance, distribution, and genetic diversity throughout its native range (Shepard et al. 2003). Reduced distribution of WCT in Montana is particularly evident in the upper Missouri River basin where genetically "pure" (i.e., not crossed with hybridizing nonnative species) populations are estimated to reside in about 4% of habitat they historically occupied. Major factors contributing to the decline of WCT include competition with nonnative trout (brook, brown, and rainbow trout) that were first introduced to Montana in the 1890's, hybridization with rainbow and Yellowstone cutthroat trout, habitat changes, over-exploitation, and isolation to small headwater streams. Most

remaining WCT populations in the upper Missouri River basin are considered to have a low likelihood of long-term persistence (<100 years) due to continued threats unless conservation actions are implemented (Shepard et al. 1997).

Long-term conservation of WCT in the upper Missouri River basin will require projects that preserve existing WCT populations in their native streams and projects that establish new WCT populations in secure habitats where they face no threats from introduced nonnative trout. The proposed actions listed below involve introducing WCT into fishless streams upstream of natural fish barriers. These efforts, using existing populations as a donor source for establishing new populations, will serve to create "genetic reserves" for populations that may disappear from their native habitat due to the factors listed above.

There are 268 miles of documented fishless stream habitat across the four drainages (Big Hole, Madison, Gallatin, and Jefferson) proposed for WCT introduction. It is expected that the actual number of fishless miles in each of these drainages is much greater because survey data is lacking in many streams and particularly small tributary streams that likely do not contain fish. Fishless streams have intrinsic value because fish introduction can alter trophic dynamics and species abundance and in some cases can impact rare or sensitive invertebrate and amphibian species (see reviews in Alan 1995, Gerking 1994, Mathews 1998); however the results of fish introduction is highly variable and dependent on many factors such as habitat and co-evolution of predator and prey species. There are 117 inventoried fishless miles of stream in the Big Hole drainage; in the Madison there are 92, in the Gallatin there are 26, and in Jefferson there are 33. FWP proposes to introduce WCT into 40 of the 268 fishless miles across these drainages for a total of 15% of the known fishless streams. WCT are proposed for introduction into 25.5 miles of stream in the Big Hole drainage (22% of fishless habitat), 3 miles of the Gallatin drainage (11.5% of fishless habitat), 5 miles of the Madison drainage (5.4% of fishless habitat), and 6.5 miles of the Jefferson drainage (19.7% of fishless habitat). If the proposed action were implemented, therefore, only a fraction (15%) of the known fishless streams would have fish introduced to them, and the majority of fishless streams in each of these drainages would remain fishless. It is anticipated that there would be few impacts to aquatic communities as a result of fish introduction based on past data collected from streams in Montana. Endangered or threatened invertebrate species have not been identified in the previously sampled fishless streams. Invertebrate and stream-dwelling amphibian species identified across southwest Montana have co-evolved in the presence of fish. Impacts to those where WCT would be introduced are expected to be minimal even though the majority of fishless streams in the drainages proposed for fish introduction will remain fishless.

Fishless Streams and Potential Donor Sources

Big Hole Drainage Streams

Dry, Sawmill, and Gravelle Creeks

Dry Creek originates in the Beaverhead Mountains west of Wisdom, Montana (Figure 1). The stream presumably gets its name because it goes dry before reaching Rock Creek. It flows for approximately three miles through mostly forested habitat before entering the Big Hole Valley

where several irrigation ditches in addition to natural geologic characteristics lead to it going dry in all but the highest of flows. Dry Creek was surveyed in July 2012 and lacked any trout species; however, mottled sculpin were present. Sculpin were also present in 1992 and 1997 when sampling was done by Forest Service crews which suggests that long-term flows are adequate to support fish in the stream. It is estimated that WCT could occupy approximately two miles of stream in Dry Creek.

Sawmill Creek is located approximately three miles to the south of Dry Creek (Figure 1). While Sawmill Creek appears to have greater available habitat (over three miles on the map), it is believed that only approximately two miles of stream could support a perennial population of fish. Forest Service inventories in 1988 found limited brook trout in the lower reaches of this stream. While the stream has not been recently surveyed using electrofishing, visual surveys failed to observe any fish in the stream. Sawmill Creek, if fishless, would also be considered a possible introduction site for WCT.

Gravelle Creek is located only six miles to the south of Sawmill Creek and also originates in the Beaverhead Mountains (Figure 1). It too goes dry shortly after leaving the mountain range and entering the Big Hole Valley. Visual surveys of the stream suggest that it is fishless but contains habitat that is adequate to support fish. It will be verified that Gravelle Creek is indeed fishless before fish are introduced through electrofishing surveys.

Possible sources of WCT that could be used to populate Dry, Sawmill, and Gravelle creeks include Rock Creek and/or an unnamed tributary to Pioneer Creek. Rock Creek is listed as containing a conservation population of cutthroat trout, but the population has not been genetically tested. Rock Creek should be the highest priority watershed to serve as a donor for Dry Creek if surveys indicate that a remnant population of non-hybridized WCT is present. If no WCT are found in Rock Creek or if they are shown to be hybridized, the nearest neighbor streams would be the unnamed tributary to Pioneer Creek and Blind Canyon Creek, both of which contain non-hybridized WCT populations and are only 15 to 20 miles south. The unnamed tributary to Pioneer Creek and Blind Canyon Creek may either be individually replicated in each stream or the streams may be populated by combining populations from both sources. Combining streams may be a better approach to break down any potential inbreeding that may have occurred or that would occur after fish introduction due to the fact that both source streams are small and have limited populations.

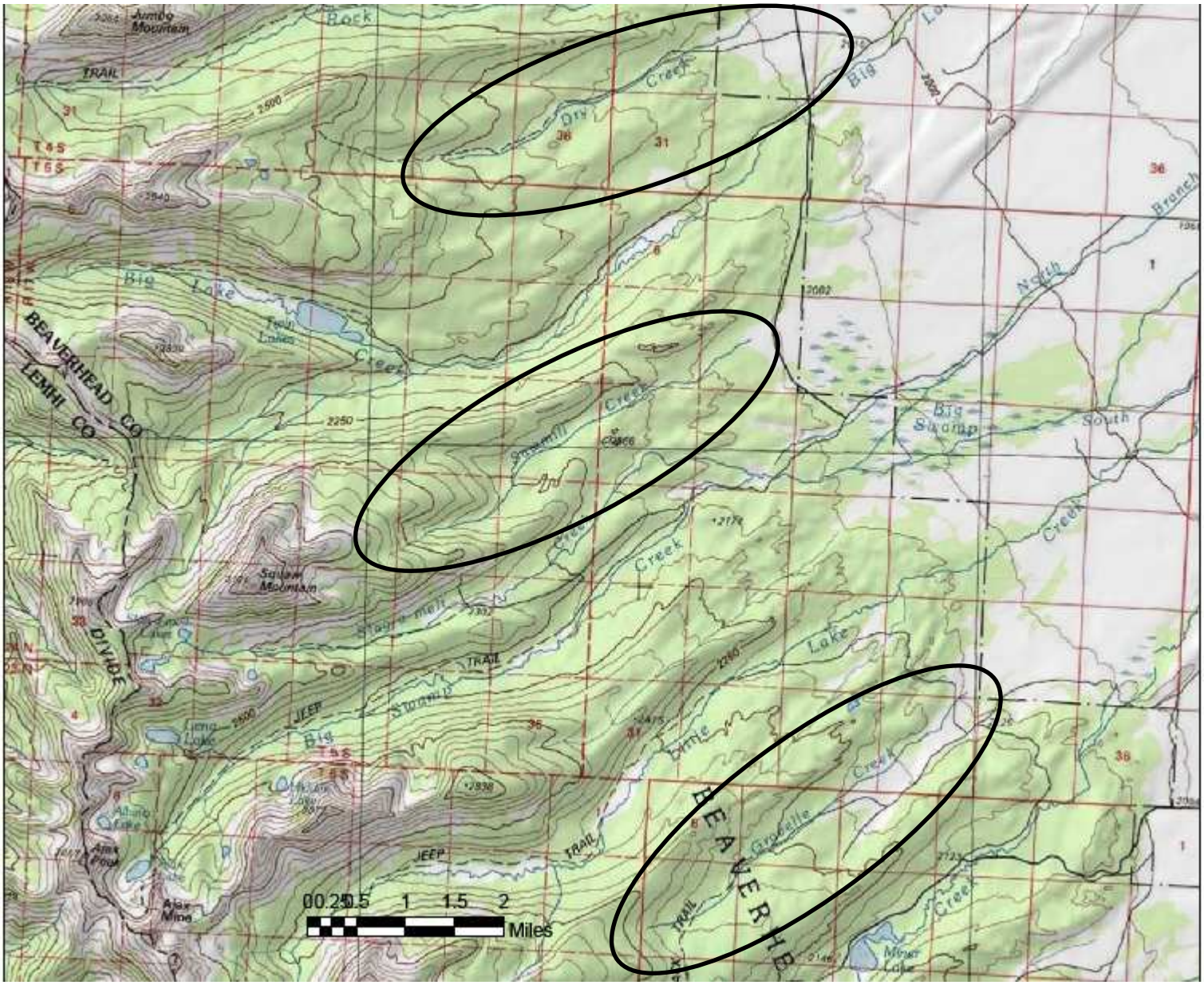

Figure 1. Map showing the location of the fishless streams Dry Creek (top), Sawmill Creek (middle), and Gravelle Creek (bottom) which drain from the Beaverhead Mountains.

Lost and Mule Creeks

Lost Creek originates in the East Pioneer Mountains between Rock Creek and Willow Creek (Figure 2). It flows east from the Beaverhead-Deerlodge National Forest onto private property and then on to lands administered by the Bureau of Land Management before intersecting I-15. The stream, similar to the streams listed above, flows from the mountains but does not reach the

Big Hole River or any other live stream. Lost Creek will flow downstream to I-15 during high flows but is intercepted by an irrigation ditch. Fisheries surveys conducted in 2010 indicated the stream is fishless (Dan Downing *personal communication*). The stream habitat is mostly moderate gradient with adequate pools and spawning areas to support a fishery. It is likely that the disconnection between the Big Hole River and the stream is the reason Lost Creek is currently fishless. Lost Creek, of all the fishless streams in the Big Hole drainage mentioned in this document, contains the most miles of habitat that could be occupied by WCT (approximately three miles).

Mule Creek is a tributary to Birch Creek also in the East Pioneer Mountains. Mule Creek, unlike Lost Creek, which goes dry and is intercepted by irrigation diversions, is fishless because of a large cascade present in the stream within 0.5 miles of the confluence with Birch Creek. Immediately upstream of this cascade the gradient lessens and there are abundant high quality pools. The trees in the basin were clear-cut at least 30 years ago, and young trees are now abundant. Mule Creek has a high amount of coarse granitic sand in the lower gradient reaches. The preponderance of sand may be related to the clear-cutting that occurred and the adjacent Forest Service road. There are also, despite the abundance of coarse sand in some reaches, abundant gravels adequate for fish spawning. There is approximately 1.3 miles of fishless stream in Mule Creek that would be suitable for WCT introduction.

There are no documented populations of non-hybridized WCT in the immediate vicinity of Lost and Mule creeks. Possible WCT source streams that could be used to populate Lost and Mule creeks are the tributaries to Governor Creek that harbor non-hybridized populations of WCT including Indian Creek, unnamed tributaries near Indian Creek, Thayer Creek, Bailey Creek, and Fox Creek. Other nearby streams with WCT populations include Sappington and the South Fork of Divide Creek.

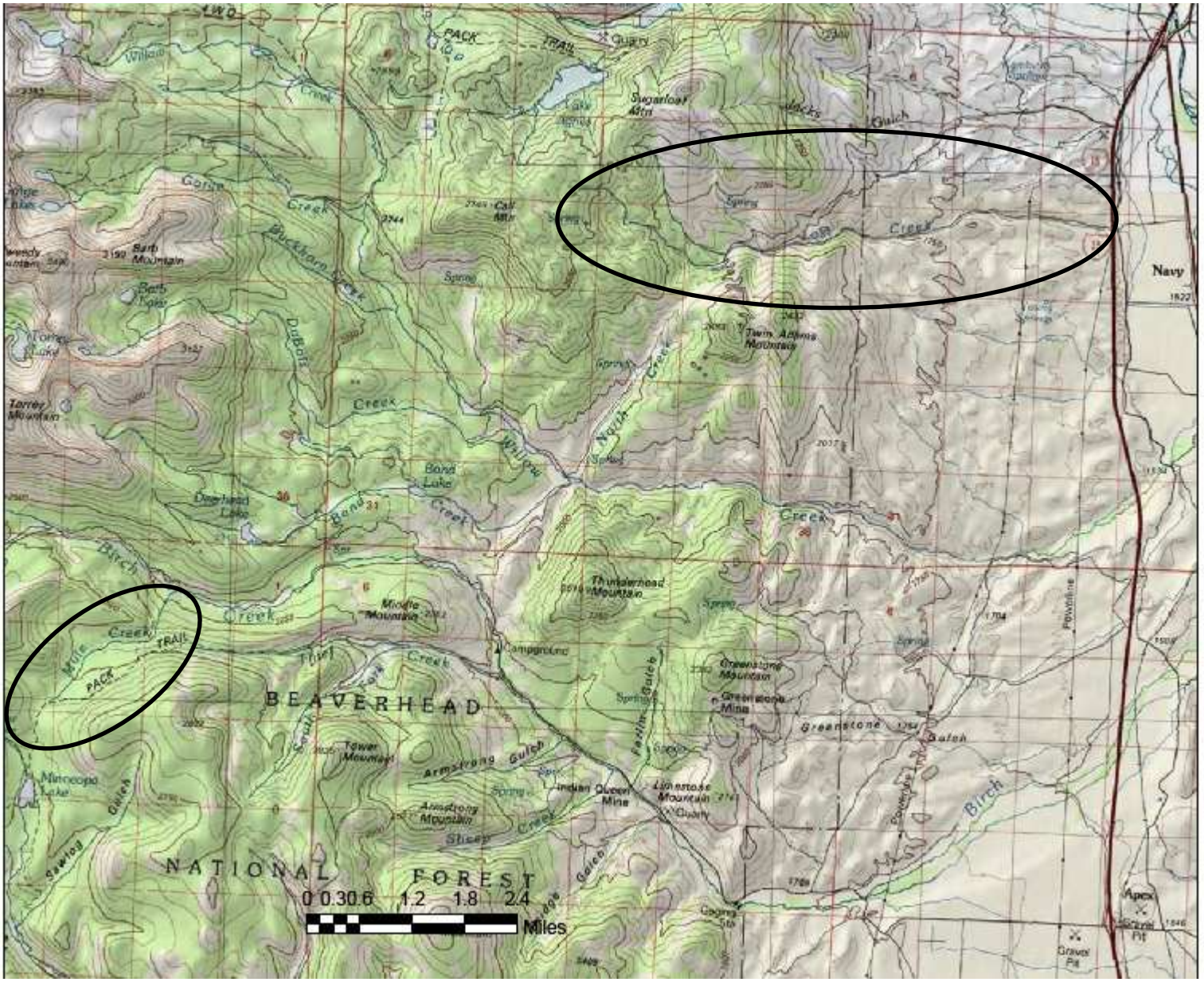

Figure 2. Map showing the location of the fishless streams Lost Creek (top right) and Mule Creek (lower left) which drain from the East Pioneer Mountains, west of Glen, Montana.

Skull and Deer Creeks

Skull Creek is a tributary to Lacy Creek which empties into the Wise River (Figure 3). A 14-foot waterfall located near the confluence of Lacy Creek isolates Skull Creek and is the reason the above stream is fishless. Fisheries surveys conducted in the stream indicate that suitable habitat is present upstream of the waterfall. Much of this upstream habitat upstream is lower gradient with abundant pools and spawning gravels. The stream was originally identified more than 15 years ago as a potential location to introduce WCT. Skull Creek is home to a tailed frog population, and it is possible that WCT introduction could have negative effects on the

abundance of these frogs in Skull Creek because the tadpoles are stream obligates and live as juveniles in streams for up to four years before becoming air-breathing adults. Tailed frogs and WCT, however, have coevolved and coexist in many streams in the Big Hole drainage and across the range of both species. It should also be noted that Skull Creek lies within the Skull Creek Research Natural Area.

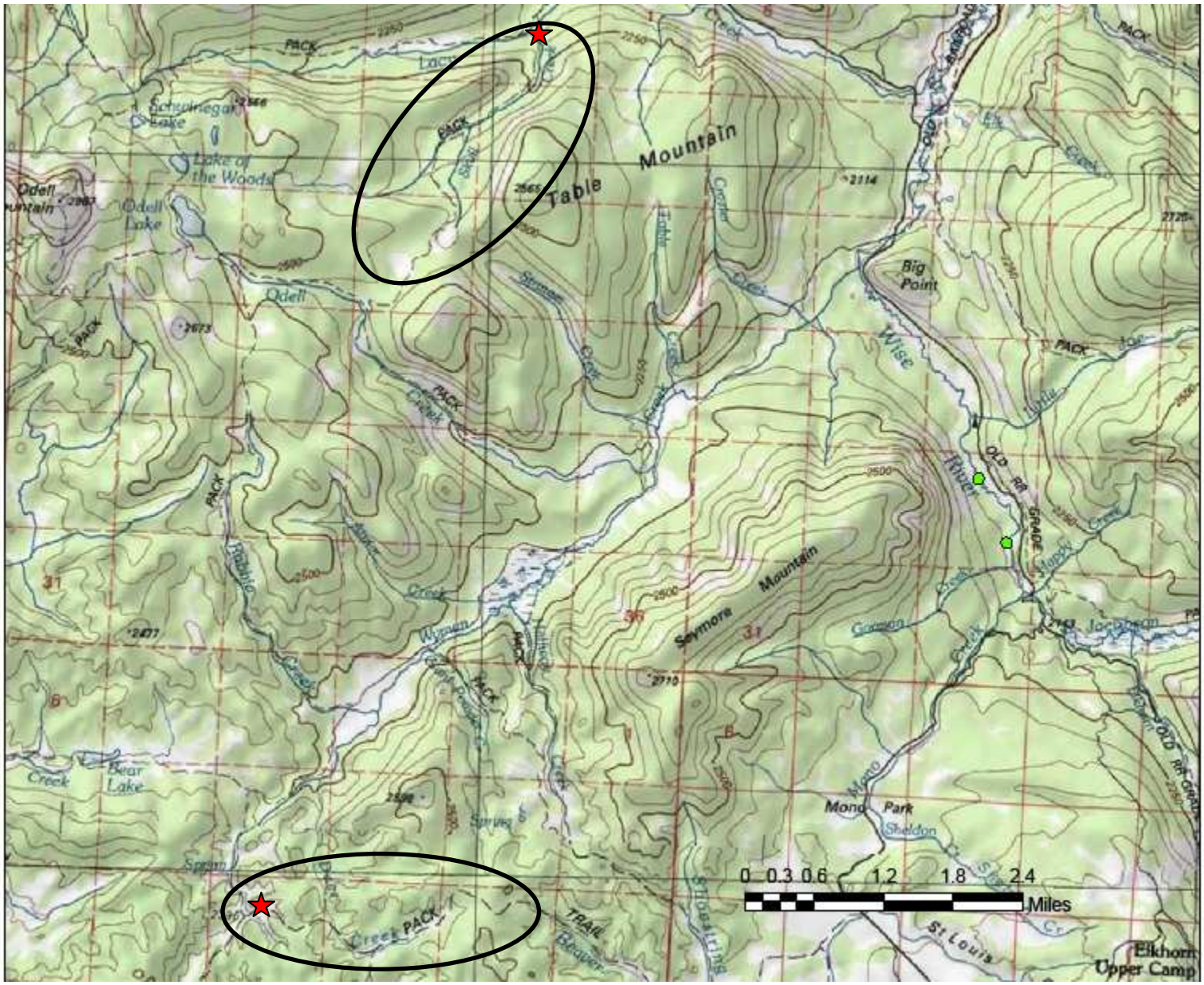

Figure 3. Map showing the location of the fishless streams Skull Creek (top) and Deer Creek (lower) which drain from the West Pioneer Mountains, south of Wise River, Montana. Stars indicate locations of natural fish barriers.

Deer Creek is a tributary to Wyman Creek which drains into the Wise River about four miles south of Lacy Creek (Figure 3). A four foot high boulder waterfall isolates Deer Creek from

Wyman Creek. Above this fish barrier, the stream is low to moderate gradient with good habitat. Only approximately 0.75 miles of stream were identified as suitable habitat for fish upstream of the boulder waterfall. No tailed frogs have been documented in Deer Creek.

The most likely donor candidate for WCT introduction into Skull and Deer creeks is Rabbia Creek which is a tributary to Wyman Creek and contains a population of non-hybridized WCT. Mono Creek is also reported to have non-hybridized WCT about four miles to the west of Deer Creek. Lacy Creek, when last surveyed, contains a slightly hybridized population of WCT (99.7% westslope) but may also be considered a candidate to introduce into Skull Creek.

Reservoir, Sheep and Meadow Creeks

Reservoir Creek is a tributary to the Pettengill Creek which drains into the Wise River. Reservoir Creek contains a conservation population of WCT near the confluence with Pettengill Creek (90% WCT). A cascade fish barrier approximately 0.5 miles upstream of the confluence is present, however, and the remaining stream upstream is fishless. Reservoir Creek has the most flow of any of the fishless streams being considered for WCT introduction in the Big Hole. The habitat in Reservoir Creek is moderate gradient, and it is likely that approximately two miles of stream could support fish. There are few pools and spawning gravels are rare because the stream is moderate gradient. A lesser gradient reach in the middle of the stream contains some spawning habitat and better pools that could serve as spawning and overwintering areas. This lesser gradient reach is approximately one mile long and should be adequate to support a perennial fishery. Streams of similar habitat and gradient are known to harbor self-sustaining populations of WCT in the Big Hole (e.g., Twelvemile Creek, Tenmile Creek and Bear Creek). Tailed frog tadpoles have been documented in Reservoir Creek.

Sheep Creek, another tributary to Wise River approximately five miles to the east of Reservoir Creek, contains a mixed population of WCT and hybridized trout with some non-hybridized WCT potentially remaining in the system. Sheep Creek would be the best potential source to populate Reservoir Creek assuming there are still non-hybridized fish remaining in the stream.

Sheep Creek flows northwesterly from the crest of the east Pioneer Mountains to its confluence with Wise River southwest or Wise River, MT. Sheep Creek flows perennially for about five miles, and the lower 1.5 miles support fish. Fish sampling was initiated in 1987 near the mouth of the stream documenting the presence of brook, westslope, cutthroat, and rainbow trout. Two stream segments were electro fished in 1994 about one mile above the mouth. WCT was the only species found. Five WCT, combined from the two reaches, were collected for genetic analysis. Results from this sample indicated these fish were non-hybridized WCT. The stream was further electrofished in 2001 consisting of electrofishing 100-yard reaches, approximately every half mile, until no fish were found. Cutthroat trout were present in low numbers at the lowermost electrofishing reach in Sheep Creek while the crew documented low numbers of brook trout in the next two reaches upstream. A natural barrier consisting of cascade and a log jam located approximately 1.5 miles upstream of the mouth appears to be the upstream extent of fish in Sheep Creek as no fish were found above this barrier. Another potential barrier was identified .5 miles upstream. Wetted width of Sheep Creek is five feet at this point, and the stream flows perennially for another three miles and is suitable for fish. Any pure WCT still

present in Sheep Creek would be moved upstream of the existing fish barriers in an effort to conserve the remaining WCT in the stream.

Meadow Creek is a tributary to the Big Hole River west of the town of Wise River. It is home to a slightly hybridized population of WCT (97.3%). The WCT in the stream are low in number due to the abundant brook trout population in the steam. A cascade reach approximately two miles upstream from the Forest Service boundary evidently prevents upstream fish passage. Flows and habitat appear to be adequate to support fish upstream, but no fish were found during recent surveys. FWP is proposing to transport the remaining WCT in Meadow Creek upstream of the cascade fish barrier into the fishless reach of stream in an effort to conserve what few fish remain in the stream.

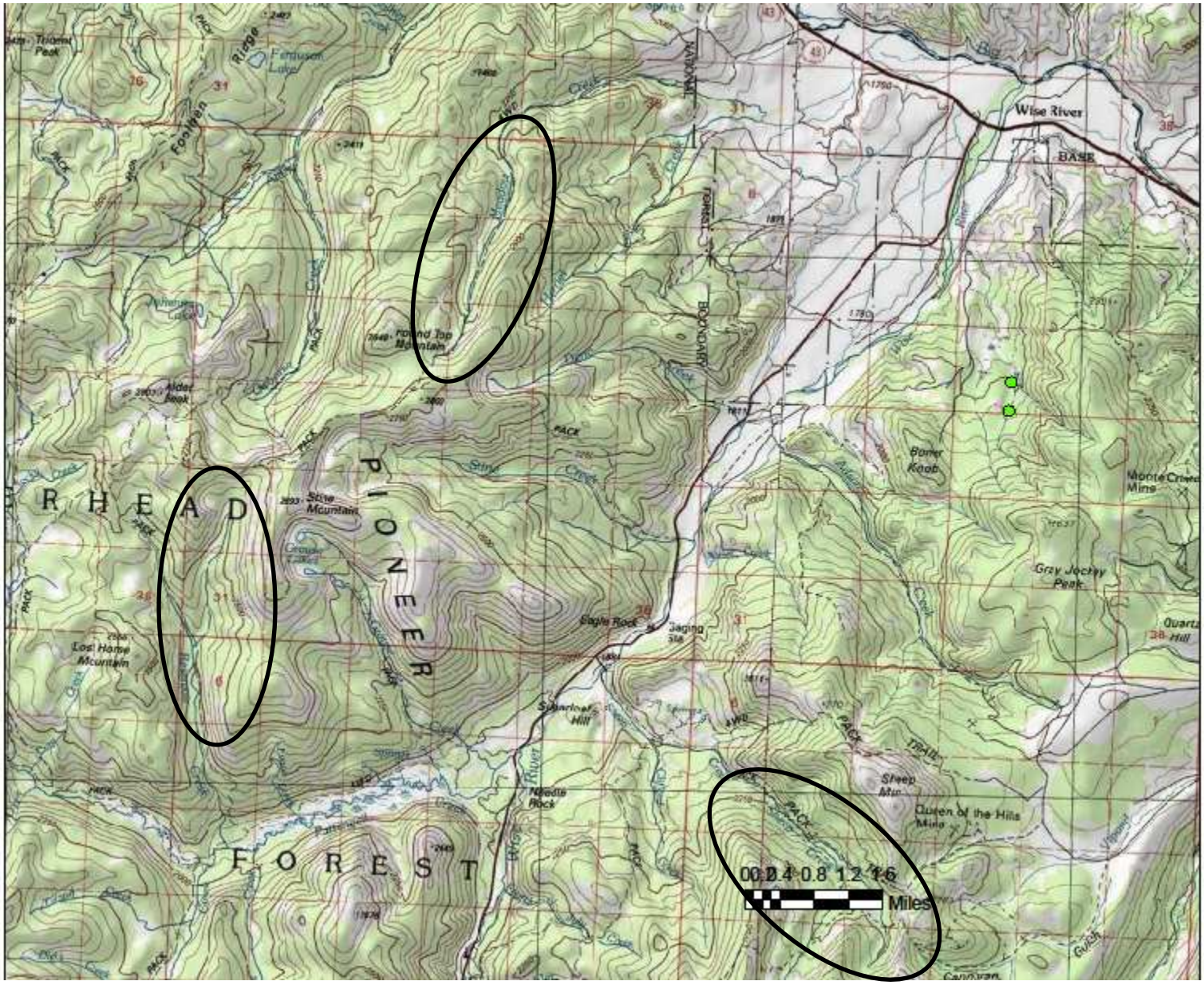

Figure 4. Map showing the location of the fishless streams Skull Creek (top) and Deer Creek (bottom) which drain from the West Pioneer Mountains, south of Wise River, Montana. Stars indicate locations of natural fish barriers.

Calvert Creek

Calvert Creek is a tributary to Bryant Creek which flows into the Big Hole River northwest of the town of Wise River (Figure 5). Calvert Creek has a cascade fish barrier approximately 400 yards upstream of its confluence with Bryant Creek. This small stream contains high-quality habitat. There is at least one mile of stream habitat in Calvert Creek that could likely support a fishery. Tailed frogs have been documented in Calvert Creek. The likely source for establishing a population of fish in Calvert Creek is Bryant Creek. Farther upstream in Trident Meadows, Bryant Creek is home to one of the largest populations of WCT remaining in the Big Hole drainage. This population exists without the threats posed by non-native fish because of a natural cascade fish barrier. This population, however, is still at risk because the cascade barrier is not likely a complete barrier, and it is quite possible that brook trout could invade this population. Having the Bryant Creek population replicated in another stream would aid in conserving the native cutthroat if the Trident Meadows area were to be colonized by non-native

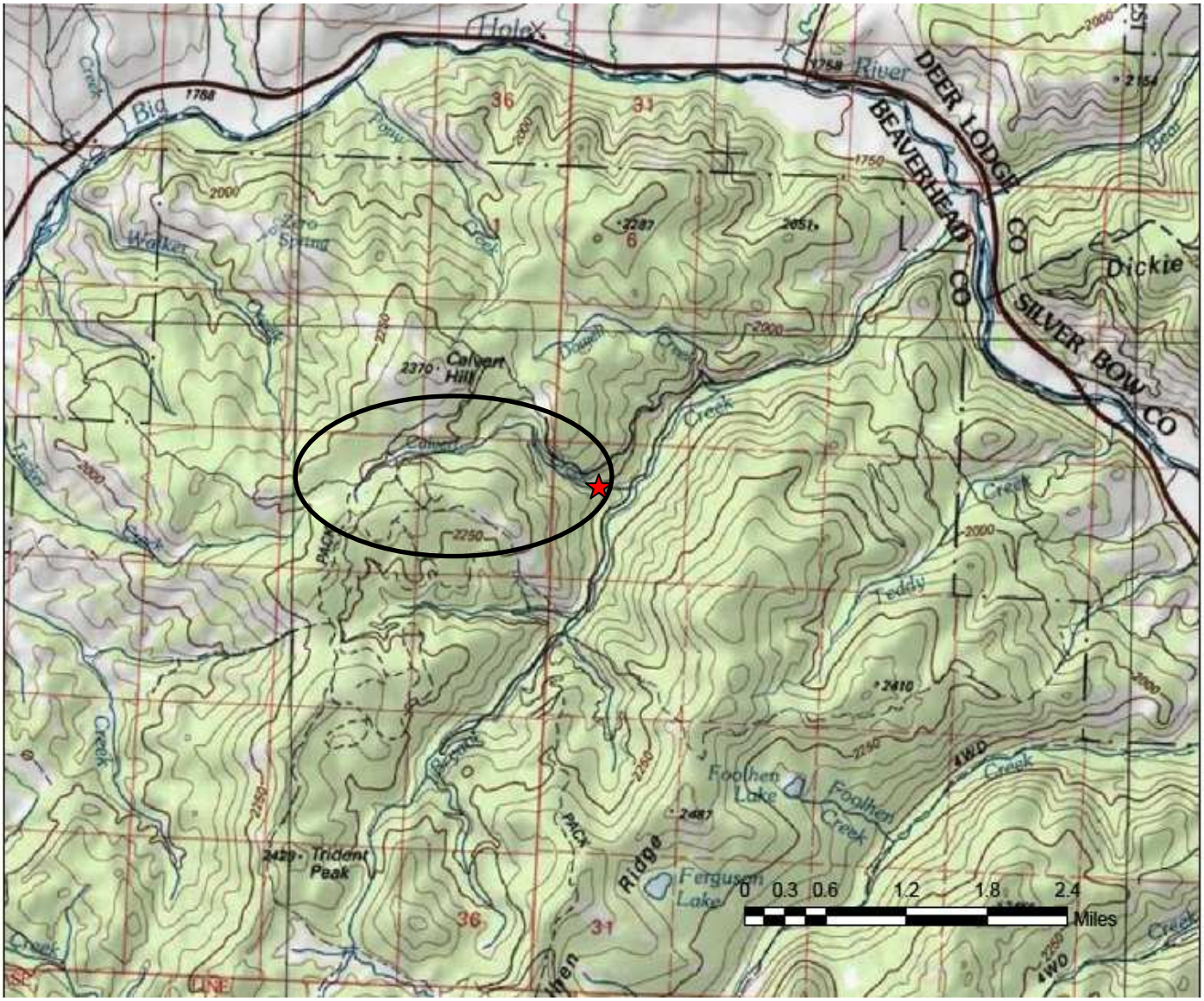

Figure 5. Map showing the location of the fishless Calvert Creek which drains from the West Pioneer Mountains west of Wise River, Montana.

fish. Another potential source of WCT for Calvert Creek is Bear Creek located approximately eight miles northeast. Bear Creek harbors a non-hybridized population of WCT that is in peril because of abundant brook trout. This population has been reduced to likely fewer than 100 individuals. Bear Creek fish will likely be the source of founding another population in Sixmile Creek which was covered in a separate EA.

Granulated, Hanson, and Unnamed Tributary to Long Tom Creek

There are three main tributaries to Long Tom Creek, a tributary to Jerry Creek that flows into the Big Hole River east of the town of Wise River (Figure 6). Past surveys indicate all three streams are fishless. All three streams have reaches near the confluence with Long Tom Creek that are very high gradient. While no fish barriers have been identified, it is assumed that barriers are

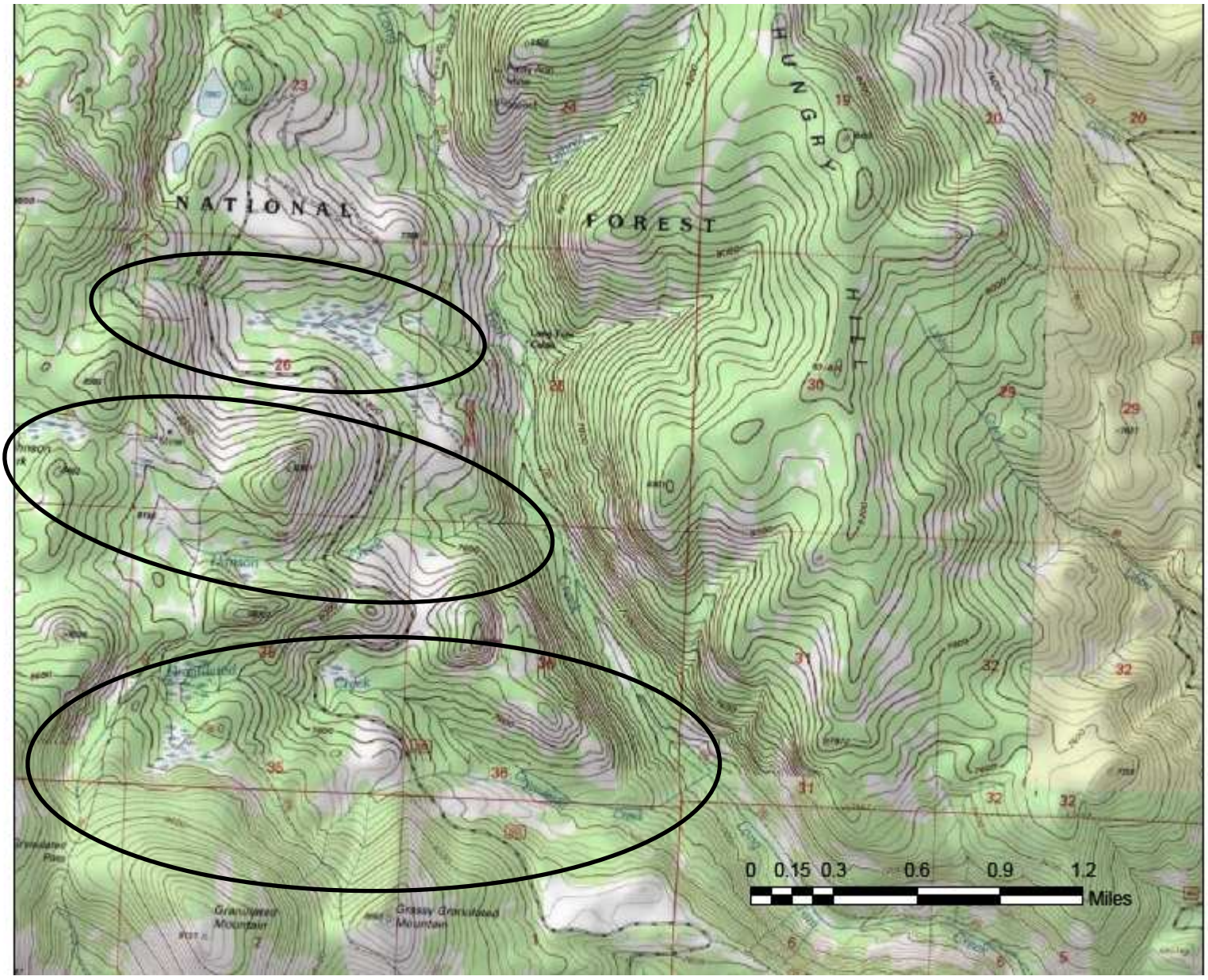

Figure 6. Map showing the location of the fishless Granulated and Hanson creeks and an unnamed Tributary to Long Tom Creek north east of Wise River, Montana.

present in these reaches preventing fish from accessing habitat farther upstream. The habitat in Granulated and Hanson creeks is mostly moderate gradient with a few low gradient reaches that likely contain spawning habitat. The unnamed tributary has a more extensive low gradient reach of approximately .75 miles that has suitable spawning habitat. Granulated Creek contains the most potential habitat with approximately 2.5 miles of stream that is suitable for WCT. The unnamed tributary was logged 20 to 30 years ago.

Potential WCT donors to the tributaries to Long Tom Creek tributaries are Jerry Creek, Delano Creek, and Spruce Creek, also both tributaries to Jerry Creek. Jerry Creek upstream of a perched culvert contains a non-hybridized population of WCT. The population is small (likely fewer than 300 individuals) but would be an excellent candidate for replication in a nearby stream such as the unnamed tributary to Long Tom Creek only four miles away. Delano and Spruce Creeks until recently similarly contained non-hybridized populations of WCT; however, genetic samples collected in 2010 indicated that both streams have been recently invaded by hybridized fish. The genetic results from Delano Creek indicated that of the 25 fish sampled, 15 were non-hybridized and 10 were hybridized with rainbow trout (87% WCT). The 2010 sampling was followed up by additional sampling in 2011 which 26 were tested from farther upstream. One of these fish showed some evidence of hybridization with rainbow trout and the others showed no evidence of rainbow trout introgression. These samples showed a very low level of introgression with Yellowstone cutthroat trout that was present in all fish in the sample. There has been no evidence in the past of hybridization with Yellowstone cutthroat trout in Delano Creek (42 samples), and there has been no Yellowstone cutthroat hybridization detected in Jerry Creek near Delano Creek. It is therefore likely that the Yellowstone cutthroat trout genes detected in this most recent sample from Delano Creek represent a WCT polymorphism rather than evidence of hybridization with Yellowstone cutthroat trout (Leary 2010). To move fish from Delano Creek to one of the tributary streams to Long Tom Creek would require that individual fish be tested to differentiate hybridized individuals from non-hybridized. Only individual fish that are verified as non-hybridized would be used as donors to the new populations.

Spruce Creek is similar to Delano Creek in that it has tested as containing only non-hybridized WCT. Samples collected in 2011, however, detected a mixture of both non-hybridized WCT and hybridized fish. Four of the thirty fish collected and genetically tested turned out to be hybridized to varying degrees with rainbow trout. Individual WCT would need to be tested prior to moving fish from Spruce Creek such that only fish that show no signs of hybridization with rainbow trout would be moved. Conservation actions in these two streams are a very high priority to salvage any remaining WCT before the hybridization spreads and the non-hybridized fish are lost, due to the recent invasion into Spruce and Delano creeks of hybridized fish.

Madison River Drainage Streams

Nickerson Creek

Nickerson Creek is a short, approximately three miles long, fishless stream that originates on the east slope of the Gravelly Mountains (Figure 7). The upper 1.5 miles of stream is on the Beaverhead-Deerlodge National Forest while the lower 1.5 miles is on FWP's Wall Creek Game Range. The stream goes subterranean .75 miles from the Madison River. Aquatic invertebrate and herpetology surveys are scheduled for 2013 to assess any potential impacts of WCT

introductions, and stream discharge and water temperature data will also be collected. Populations that would be potentially used to stock Nickerson Creek are the last two known aboriginal genetically pure Madison WCT populations: Wally McClure Creek and Last Chance Creek.

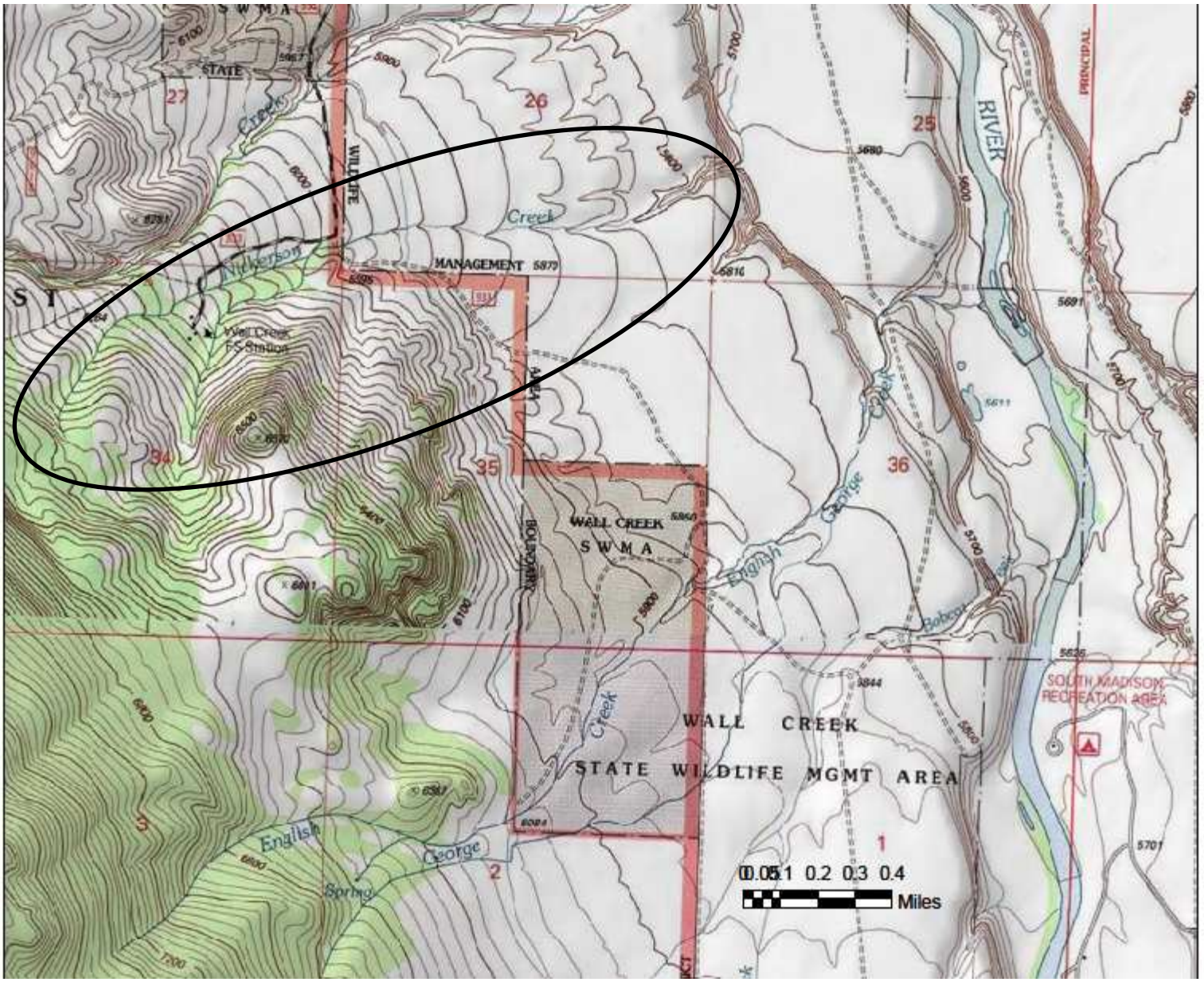

Figure 7. Map showing the location of the fishless Nickerson Creek southwest of Cameron, Montana.

South Fork Cabin Creek

South Fork Cabin Creek is a second order stream with a base level discharge estimated at 2.5 to

3.0 cfs at Forest Service Trail # 210 (Figure 8). The stream flows northwesterly draining the south side of Kirkwood Ridge approximately 16 miles northwest of West Yellowstone, Montana. The stream is approximately two miles in length including a lower series of cascades just above the confluence with the Middle Fork Cabin Creek. No one cascade has been identified as preventing fish from expanding into the headwaters, but it is believed that the barrier preventing upstream fish passage consists of several cascades in close proximately near the mouth. The stream above these cascades meanders through an open meadow with high quality habitat. Aquatic invertebrates were surveyed to determine if they were any rare or unique species and none were detected. Water temperature was monitored in 2005 and 2006 with an average August mean temperature of 50.4°F and 50.7°F, respectively. The donor source for the South Fork would be slightly hybridized fish from other headwater streams in the larger Cabin

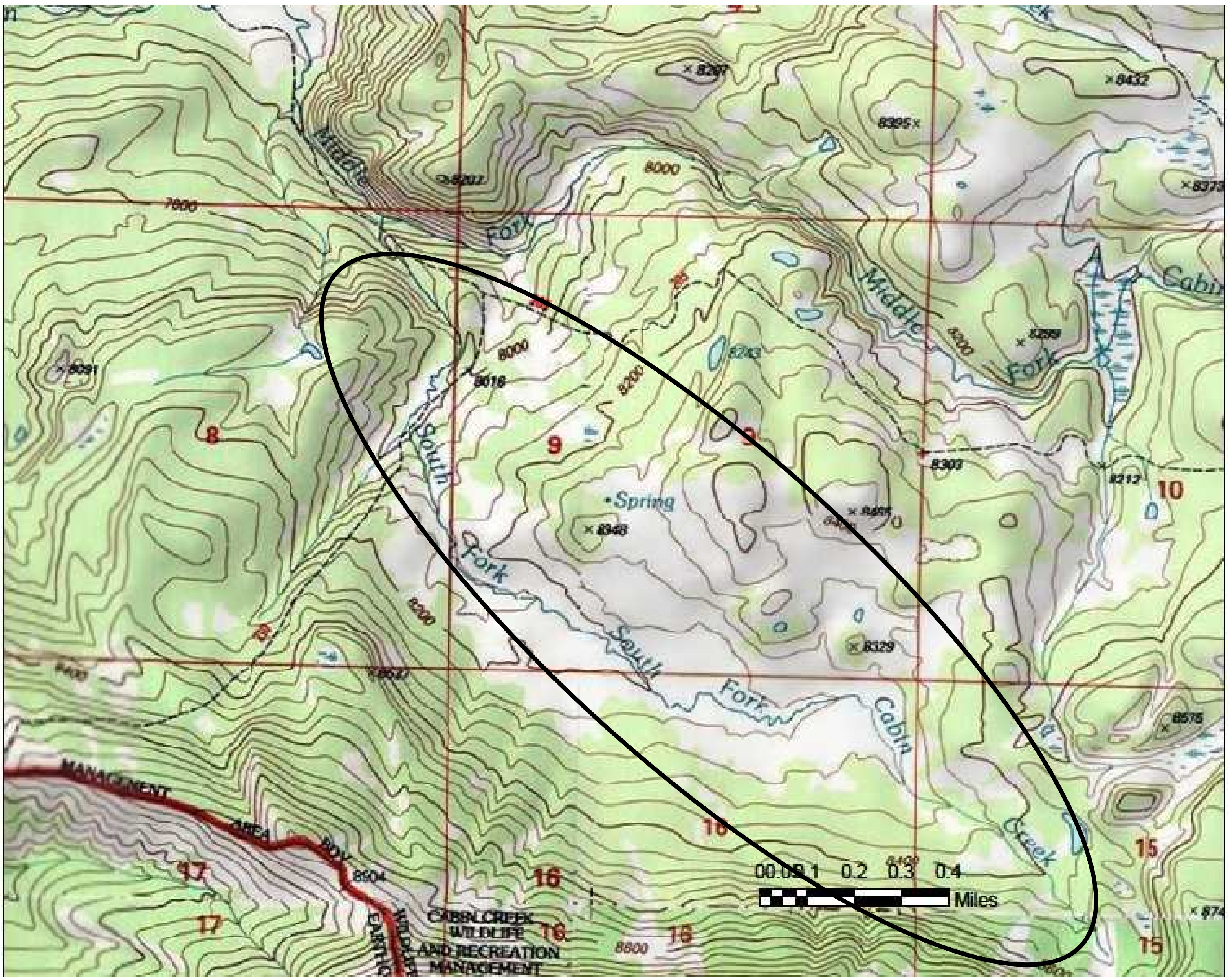

Figure 8. Map showing the location of the fishless South Fork Cabin Creek north of Hebgen Lake, Montana.

Creek drainage.

Gallatin River Drainage

Placer Creek

Placer Creek is a small first-order stream with a base level discharge estimated at between 1.5 to 2.0 cfs. The stream flows northeasterly draining the north side of the Spanish Peaks approximately 25 miles southwest of Bozeman, Montana (Figure 9). The stream is approximately three miles long, and the lower half mile includes several steep cascades before the confluence with the North Fork Spanish Creek. These cascades act as a barrier to migrating fish. A few small ditches were historically used to withdraw water from Placer Creek to operate a placer mining operation. The stream gradient above the cascades lessens, and the stream flows through a mosaic of lodgepole pine forest including several small wet meadows. Aquatic invertebrates were surveyed to determine if there were any rare or unique species, and none were present. Water temperature was monitored in 2011 with an average August mean temperature of 48.4^{o}F. The donor source for Placer Creek would include one or more of the three remaining

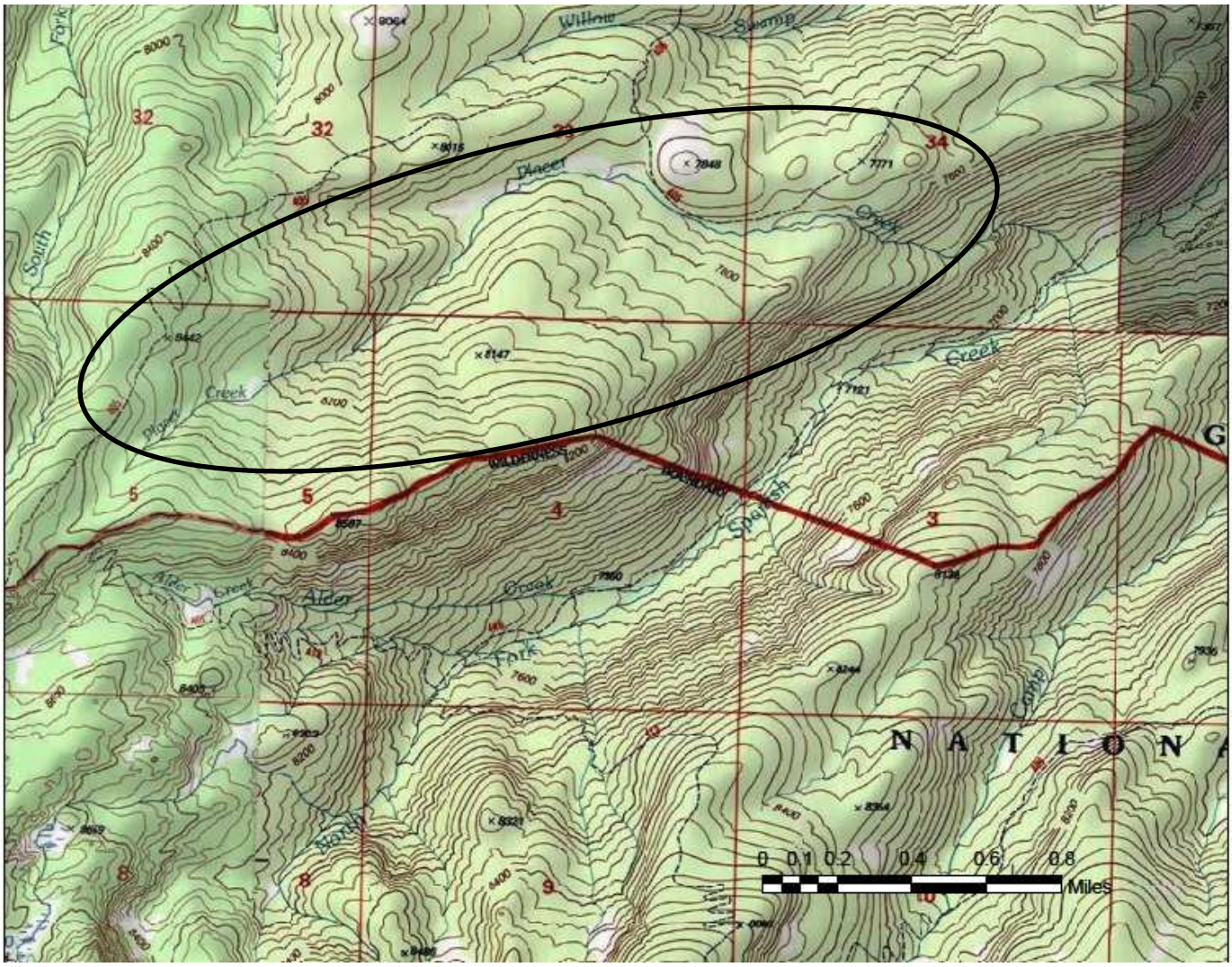

Figure 9. Map showing the location of the fishless Placer Creek west of Big Sky, Montana.

non-hybridized WCT populations in the Gallatin River basin (Bostwick Creek, Wild Horse Creek, and West Fork Wilson Creek). Each of these populations is a high risk of extirpation due to hybridization or to small population size. Aboriginal, non-hybridized WCT would quite possibly be extirpated from these streams due to competition from non-native brook trout or hybridization from rainbow trout if immediate conservation actions are not taken. It may be necessary to expand the list of potential donor streams to other areas within upper Missouri and/or to populations that are slightly hybridized if introduction is not feasible due to hybridization or the presence of pathogens or other factors.

Jefferson River Drainage

Curly Creek

Curly Creek, a tributary of the South Boulder River near Cardwell, currently contains no fish. The high elevation stream (8,500 feet at the origin) located in the Tobacco Root Mountains flows approximately three miles to the confluence with the South Boulder River (Figure 10). A natural waterfall located about 0.5 miles upstream of the confluence prevents fish from entering the fishless reach of Curly Creek. Surveys conducted by MFWP and USFS in 2008 confirmed that no fish reside in the 2.6 mile reach of Curly Creek upstream of the falls.

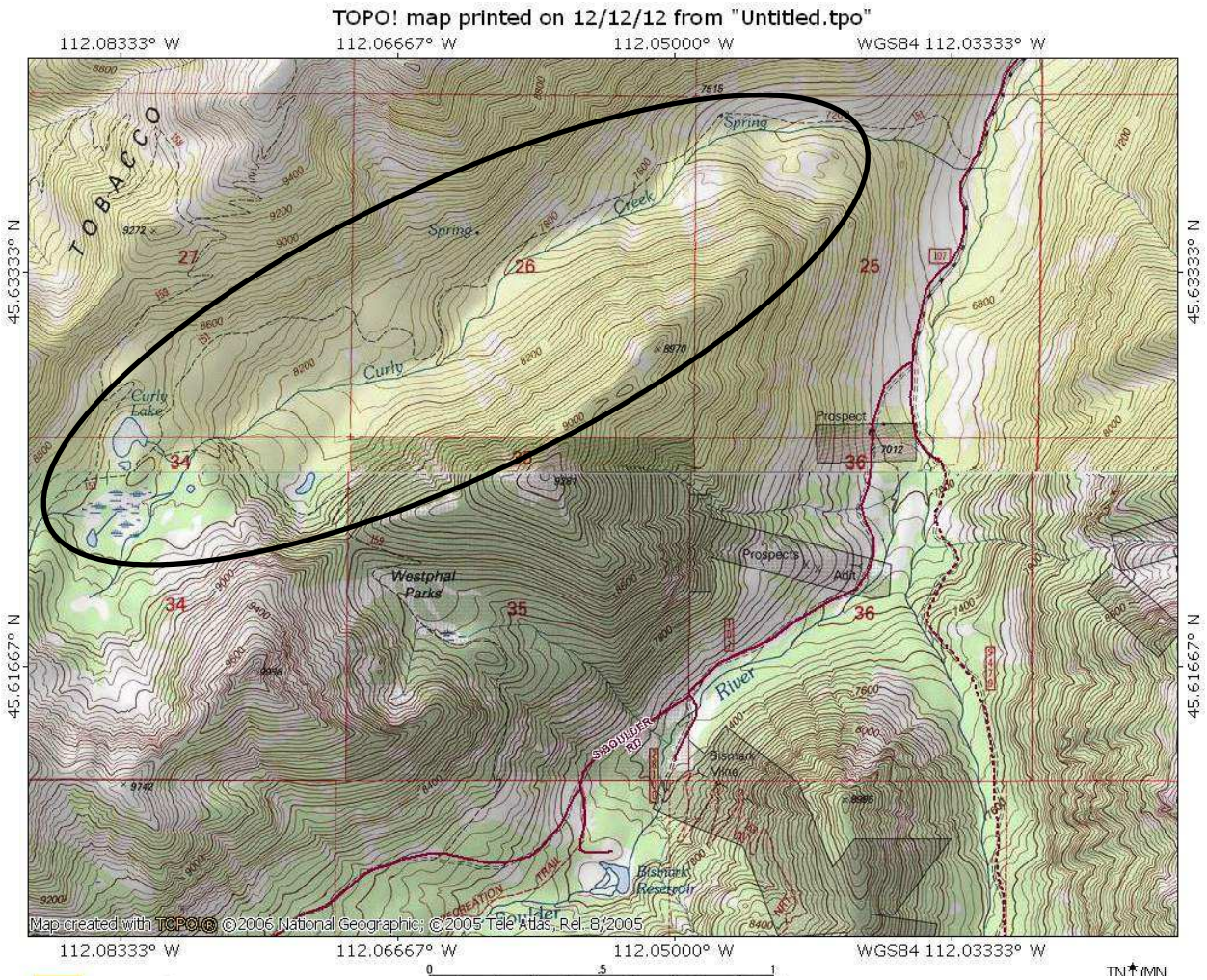

Figure 10. Fishless reach of Curly Creek south of Cardwell, MT proposed for WCT introduction.

Curly Creek is relatively small (summer baseflow less than 5 cfs), and the physical habitat appears to be suitable for supporting a resident fishery. The high gradient and low water temperature would likely result in a low to moderate population size in the habitat upstream of the natural barrier. The isolated nature of the stream, however, could result in a relatively secure refuge for genetically pure WCT. Possessing 2.6 miles of occupied habitat in this stream would represent a great step forward for WCT conservation given the paucity of WCT populations in the Jefferson River drainage. The two most likely candidates for introduction to Curly Creek are the Little Boulder River and Whitetail Creek because of their geographic proximity. The use of other upper Missouri River WCT populations could be necessary, however, if unanticipated issues (e.g., presence of disease, genetics issues, or reduced population abundance) prevent the use of Little Boulder River and or Whitetail Creek as a donor stream.

Rock Creek

Rock Creek originates in the Boulder Mountains between Indian and Thunderbolt creeks. It flows south on Beaverhead-Deerlodge National Forest, entering the Boulder River about 20 miles west of the city of Boulder, Montana (Figure 11). The upper 3.8 stream miles of mainstem Rock Creek and an unnamed tributary entering from the east are presumed to be fishless. Both are upstream of a natural bedrock waterfall (35-40 feet in height) in the upper drainage. No fish were captured or observed in 0.25 miles of high quality stream habitat during electrofishing surveys above the natural barrier in summer 2010 (Darin Watschke *personal communication*). Stream habitat was documented to be of low to moderate gradient, possessed deep pools (three to five feet maximum depth) and adequate spawning sized gravels to harbor a self-sustaining population of WCT. The upper Rock Creek drainage holds high potential for westslope cutthroat trout restoration. The likely source of WCT to be stocked into Rock Creek is Muskrat Creek based on genetic testing and geographic proximity. Other potential sources within the Upper Missouri River Basin, however, may be used instead of or in addition to Muskrat Creek to populate the stream.

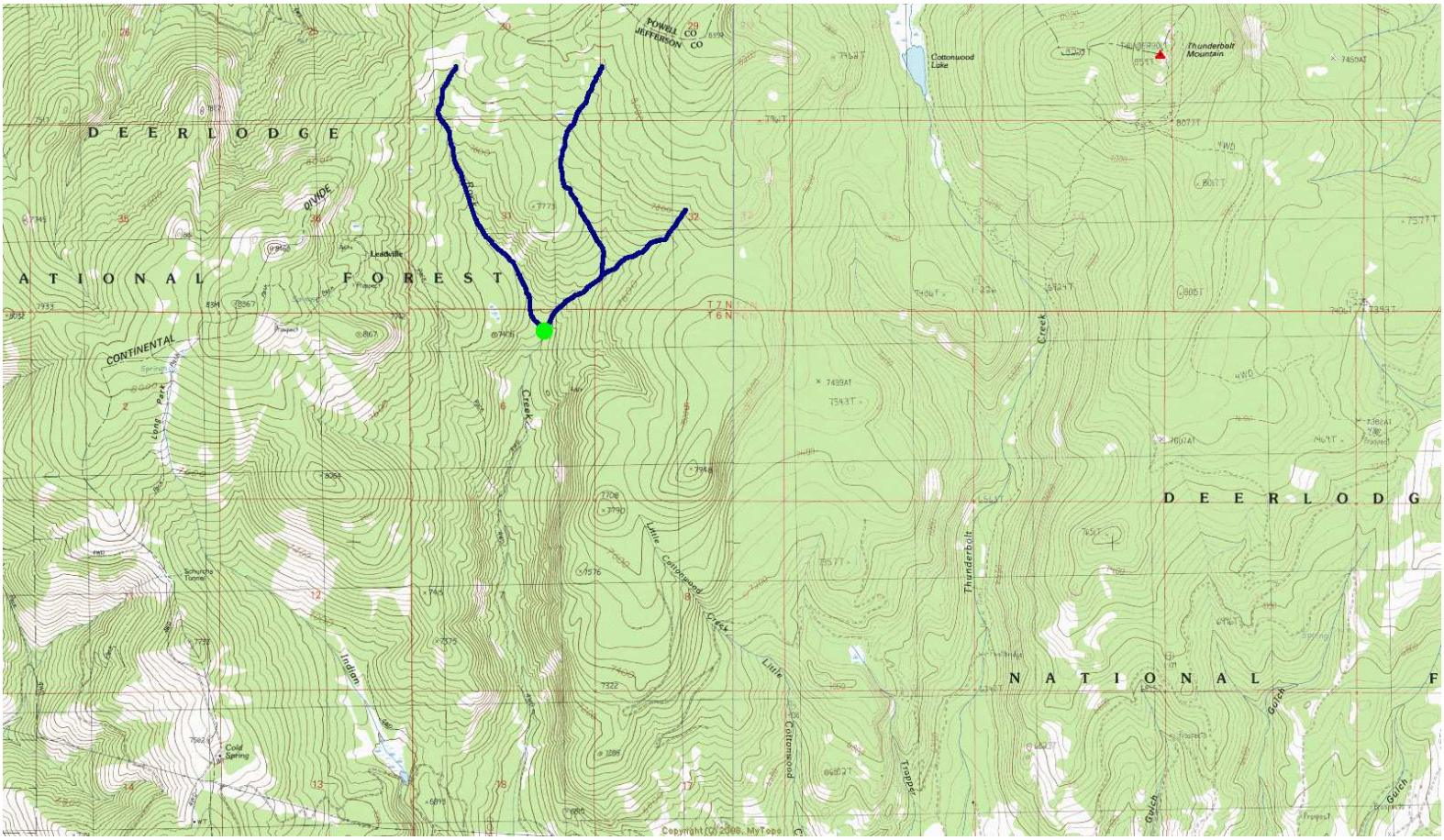

Figure 11. Map of Rock Creek in the Boulder River drainage showing reaches of the stream that are fishless (darkened lines) upstream of the waterfall (dot).

Porcupine Gulch

Porcupine Gulch is a tributary to the upper North Fork Little Boulder River and is fishless upstream of the mouth for approximately one mile (Figure 12). Rainbow and brook trout are present in North Fork Little Boulder River. The most likely source of fish for WCT introduction would be the Little Boulder River located only six miles southwest of Porcupine Creek.

Protocol for Fish Introduction

Aquatic invertebrates would be collected and analyzed prior to WCT introduction to any of the streams mentioned above to determine if any rare, threatened, or endangered species would be impacted. Some of these streams have already been surveyed for aquatic invertebrate species, and invertebrates common to both fish-bearing and fishless streams have been found. No threatened or endangered aquatic invertebrates have ever been found in streams considered for cutthroat trout introduction despite multiple samplings of fishless streams across southwest Montana. Aquatic invertebrate experts from the Montana Natural Heritage Program would be consulted in the event a rare invertebrate species is present and could potentially be impacted by

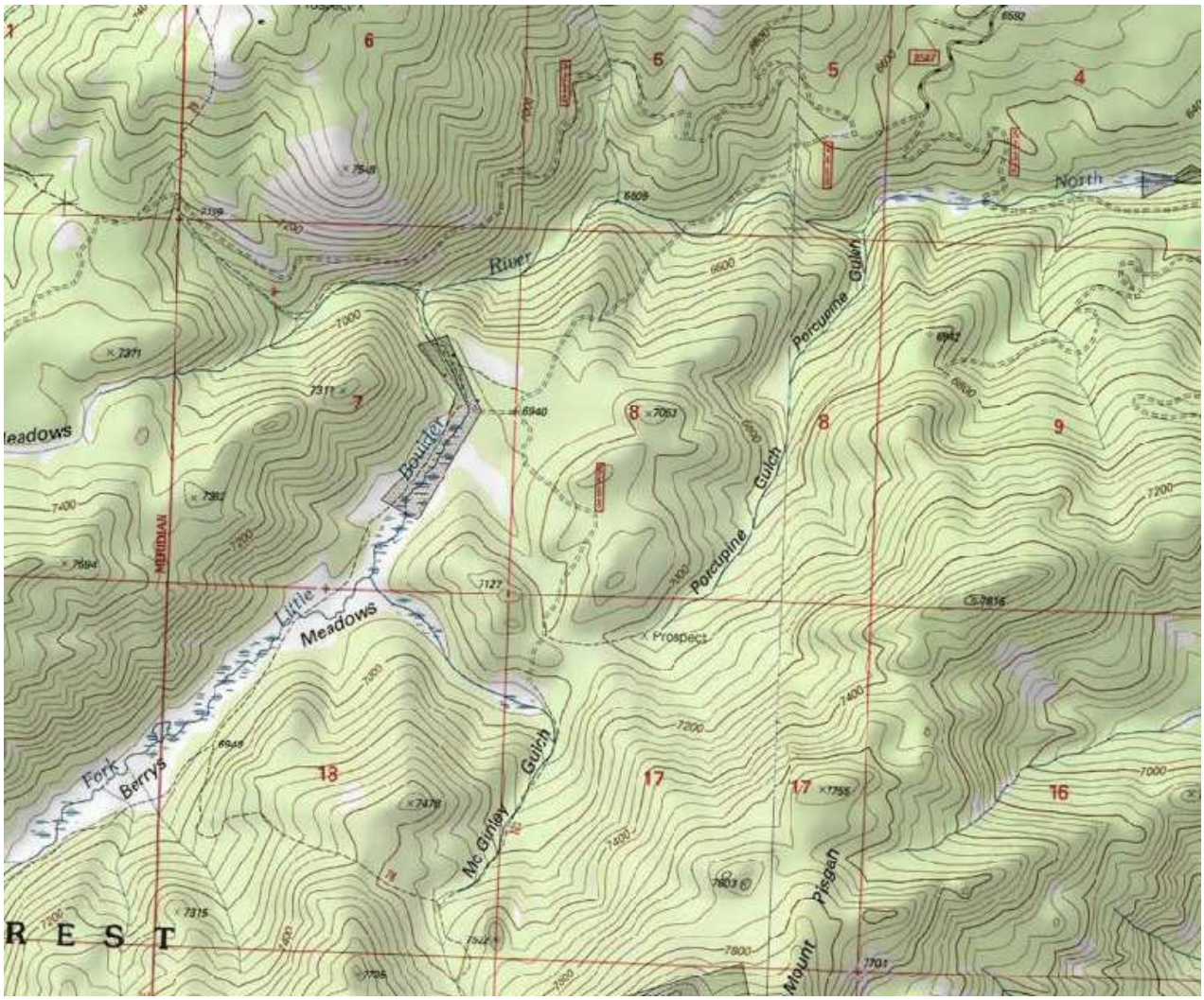

Figure 12. Fishless reaches of Porcupine Gulch in the North Fork of Little Boulder River drainage.

fish introduction. A stream would then not be stocked with WCT and would remain fishless if the potential impacts are high or are unknown. Some rare invertebrates, however, have coevolved with fish, and there is little interaction between the two species and therefore little impact from fish introduction. Consultation with aquatic invertebrate experts is necessary if a rare invertebrate is encountered during pre-introduction sampling.

Amphibians sensitive to fish introductions, like the Columbia spotted frog, reproduce in lakes or ponds and would not be affected by the proposed WCT introduction. The only stream breeding species common to the area, the western toad and the tailed frog, co-evolved and co-exists elsewhere with WCT. Western toads are not stream obligate breeders and can use standing water bodies as an alternative breeding location. Tailed frogs are stream obligates, but of the streams considered for fish introduction in this document, tailed frogs are only present in the Big Hole drainage in Skull, Reservoir, and Calvert creeks. Fish introduction is not likely to have a significant impact on amphibian species.

Donor stream would be genetically tested and fish disease samples collected prior to transporting live WCT or eggs. Fish that show introgression levels less than 1% will be considered the

highest priority for introduction. Some streams are known to contain mixed populations of WCT where both non-hybridized and slightly hybridized fish are present. Individual testing may be done on some of these populations and movement of only non-hybridized or very slightly hybridized fish may occur. Approval from the FWP Fish Health Committee, in addition to genetic testing, would be obtained prior to moving live fish or eggs. Donor streams are generally tested for pathogens in order to obtain this approval. A Wild Fish Transport Permit will be sought from the FWP Fish Health Committee if fish in the stream are shown to be disease free. This committee reviews the results of the pathogen testing and determines the potential risk of spreading disease before issuing a transport permit. The donor stream is also tested for the presence of aquatic nuisance species such as Eurasian aquatic milfoil and zebra mussels to prevent the unintentional spread of these species. None of the streams in the document are known to have aquatic invasive species present. Aquatic invasive species personnel are also involved in issuing the fish transport permit.

Live WCT would be captured from donor streams using electrofishing, held in aerated coolers or in a hatchery tank and transported to the receiving stream. Water temperatures at the receiving stream would be equilibrated between the receiving stream and the water in the coolers/tank. The fish, once equilibrated, would be released into the receiving stream. The other method for introducing WCT to the streams would be to collect fertilized eggs from donor populations and introducing the eggs or fry to the receiving streams. Any introduced eggs would be incubated in remote stream-side incubators and released directly to the stream. The goal of the introduction methods would be to release 50 pairs (100 total fish) into each receiving stream to have the greatest chance of capturing the genetic diversity in the donor streams and to prevent future inbreeding in the recipient stream. Many of the donor populations may be too small to have 100 fish removed from them and still remain viable, therefore the goal of introducing 100 would be accomplished using 1 of 2 methods. Method 1 consists of moving a smaller number of individuals from a single population over multiple years until the 100 fish mark was met. Method 2 consists of combining WCT from multiple donor streams until the 100 fish mark was met. This 100-fish goal may take multiple years to achieve. There are advantages and disadvantages to both strategies. Founding a population from a single source will conserve those potentially locally adapted traits of that population. Using a single population, however, may result in low genetic diversity because many of the donor populations are small and have likely gone through several genetic bottlenecks. Combining populations would break down inbreeding that may have occurred previously, but if there are locally adapted traits present, these too could be lost through cross-breeding. It is possible that fewer than 50 pairs of fish would be moved if populations are combined because the risk of inbreeding would be greatly diminished. FWP would plan on replicating individual populations and/or combining individuals from several populations to colonize the fishless streams mentioned in this document. Genetic characteristics of resulting populations would be monitored and evaluated. The results of this monitoring will help guide fish introductions in the future. FWP will consult with geneticists on all projects to ensure any potential negative genetic consequences (inbreeding or outbreeding) are minimized.

10. List of agencies consulted during preparation of the EA:

- U.S.D.A. Forest Service, Beaverhead-Deerlodge National Forest, Wise River, Bozeman, Ennis
- U.S.D.I. Bureau of Land Management

PART II. ENVIRONMENTAL REVIEW

A. PHYSICAL ENVIRONMENT

1. LAND RESOURCES Will the proposed action result in:	IMPACT				Can Impact Be Mitigated	Comment Index
	Unknown	None	Minor	Potentially Significant		
a. **Soil instability or changes in geologic substructure?		X				
b. Disruption, displacement, erosion, compaction, moisture loss, or over-covering of soil which would reduce productivity or fertility?		X				
c. **Destruction, covering or modification of any unique geologic or physical features?		X				
d. Changes in siltation, deposition or erosion patterns that may modify the channel of a river or stream or the bed or shore of a lake?		X				
e. Exposure of people or property to earthquakes, landslides, ground failure, or other natural hazard?		X				
f. Other:						

2. AIR Will the proposed action result in:	IMPACT				Can Impact Be Mitigated	Comment Index
	Unknown	None	Minor	Potentially Significant		
a. **Emission of air pollutants or deterioration of ambient air quality? (also see 13 (c))		X				
b. Creation of objectionable odors?		X				
c. Alteration of air movement, moisture, or temperature patterns or any change in climate, either locally or regionally?		X				
d. Adverse effects on vegetation, including crops, due to increased emissions of pollutants?		X				
e. ***For P-R/D-J projects, will the project result in any discharge, which will conflict with federal or state air quality regs? (Also see 2a)		NA				
f. Other:						

3. WATER **Will the proposed action result in:**	**IMPACT**				**Can Impact Be Mitigated**	**Comment Index**
	Unknown	**None**	**Minor**	**Potentially Significant**		
a. *Discharge into surface water or any alteration of surface water quality including but not limited to temperature, dissolved oxygen or turbidity?		X				
b. Changes in drainage patterns or the rate and amount of surface runoff?		X				
c. Alteration of the course or magnitude of floodwater or other flows?		X				
d. Changes in the amount of surface water in any water body or creation of a new water body?		X				
e. Exposure of people or property to water related hazards such as flooding?		X				
f. Changes in the quality of groundwater?		X				
g. Changes in the quantity of groundwater?		X				
h. Increase in risk of contamination of surface or groundwater?		X				
i. Effects on any existing water right or reservation?		X				
j. Effects on other water users as a result of any alteration in surface or groundwater quality?		X				
k. Effects on other users as a result of any alteration in surface or groundwater quantity?		X				
l. ****For P-R/D-J, will the project affect a designated floodplain? (Also see 3c)		NA				
m. ***For P-R/D-J, will the project result in any discharge that will affect federal or state water quality regulations? (Also see 3a)		NA				
n. Other:						

4. VEGETATION **Will the proposed action result in:**	**IMPACT**				**Can Impact Be Mitigated**	**Comment Index**
	Unknown	**None**	**Minor**	**Potentially Significant**		
a. Changes in the diversity, productivity or abundance of plant species (including trees, shrubs, grass, crops, and aquatic plants)?		X				
b. Alteration of a plant community?		X				
c. Adverse effects on any unique, rare, threatened, or endangered species?		X				
d. Reduction in acreage or productivity of any agricultural land?		X				
e. Establishment or spread of noxious weeds?		X				
f. ****For P-R/D-J, will the project affect wetlands, or prime and unique farmland?		NA				
g. Other:						

**** 5. FISH/WILDLIFE** **Will the proposed action result in:**	**IMPACT**				**Can Impact Be Mitigated**	**Comment Index**
	Unknown	**None**	**Minor**	**Potentially Significant**		
a. Deterioration of critical fish or wildlife habitat?		X				
b. Changes in the diversity or abundance of game animals or bird species?			X		No	5b
c. Changes in the diversity or abundance of nongame species?			X		No	5c
d. Introduction of new species into an area?			X		No	5d, 5b
e. Creation of a barrier to the migration or movement of animals?		X				
f. Adverse effects on any unique, rare, threatened, or endangered species?	X					5f
g. Increase in conditions that stress wildlife populations or limit abundance (including harassment, legal or illegal harvest or other human activity)?		X				
h. ****For P-R/D-J, will the project be performed in any area in which T&E species are present, and will the project affect any T&E species or their habitat? (Also see 5f)		NA				
i. ***For P-R/D-J, will the project introduce or export any species not presently or historically occurring in the receiving location? (Also see 5d)		NA				
j. Other:						

Comment 5b. The proposed project would increase the abundance and range of non-hybridized and potentially slightly hybridized WCT, a rare game fish with limited distribution in southwest Montana. This is a minor impact because no displacement of other game fish is expected, and the distribution of a game fish (WCT) would increase. An overall increase in angling opportunities is expected with this project. Westslope cutthroat trout are currently protected by catch-and-release regulations in southwest Montana streams, but restoration efforts like the proposed action are intended to increase overall WCT abundance and distribution. Increased harvest opportunities are possible by improving the status of WCT in southwest Montana.

Comment 5c: The proposed action would introduce WCT into streams that are currently barren of fish. A potential impact of any fish introduction into a fishless stream is on resident aquatic invertebrates and amphibians. WCT are opportunistic foragers, therefore their introduction to the proposed streams could cause changes in the abundance of some aquatic macroinvertebrate taxa. Macroinvertebrate samples would be or already have been collected and analyzed in order to determine if WCT would impact any unusual, sensitive, threatened, or endangered species. WCT introduction would not take place if rare or sensitive taxa are identified in the potential recipient streams until consultation is made with aquatic invertebrate specialists from the Montana Natural Heritage Program to determine if fish introduction would potentially impact the identified species.

The introduction of WCT into the proposed streams is also unlikely to have major impacts on native amphibians. Amphibians sensitive to fish introductions, like the Columbia spotted frog, reproduce in lakes or ponds and would not be affected by the proposed WCT introduction. Spotted frogs and WCT further have co-evolved and coexist in many streams and lakes. The only stream breeding species common to the area, the western toad and the tailed frog, also co-evolved and co-exists with WCT. Tailed frogs are known to be present in two of the streams proposed for WCT introduction in the Big Hole drainage.

There are 268 inventoried miles of fishless streams across the four drainages proposed for fish introduction. WCT would be introduced into 40.2 miles of the 268 available miles of stream (15%) if the proposed action were implemented. The majority of inventoried fishless streams in these watersheds will be left fishless, therefore, even though fish would only have a minor impact on aquatic invertebrate and amphibian communities.

Comment 5d: This project would introduce WCT to streams that are currently barren of fish. It is unknown if WCT historically occupied the reaches of stream proposed for fish introduction, even though they are native to southwest Montana. In some cases there are evident fish barriers, but it is likely that WCT were never present upstream of these barriers. It is less clear however, in other cases where cascades appear to be preventing upstream migration if WCT may have formerly colonized the stream and had been naturally extirpated. The introduction of WCT to the fishless reaches of the proposed streams (as described in Comment 5b) is expected to benefit the long-term persistence of the WCT populations across their range in southwest Montana.

Comment 5f. The outcome of the transfer of fish is not certain, therefore it is possible that the movement of WCT could negatively impact the existing WCT population in the donor streams. It is possible, albeit unlikely, that the habitat in the proposed streams is not suitable for WCT and

the introduction fails. FWP intends to move up to 100 WCT from potential donor streams, however, therefore it is possible that the WCT population in the currently occupied habitat could be impacted. The WCT donor populations, however, are either secure above existing fish barriers (population replication) or in immediate jeopardy of extirpation due to competition and/or hybridization with non-native trout, as described above, and if conservation actions are not taken the population will likely be eliminated within a short time period (population salvage). If the introduction fails, the outcome would likely be similar to the no action alternative even if the introduction fails. Recipient streams will have the highest quality habitats and most favorable temperature regimes to have the greatest chance of success when a complete rescue is attempted (i.e., salvaging all remaining WCT from a population and relocating them to new habitat).

FWP, in consideration of all the issues listed above, has determined that the potential negative impacts are not major for WCT or recreational fisheries management, and any potential impacts would likely be beneficial to the conservation of WCT and would potentially provide additional angling opportunities.

B. HUMAN ENVIRONMENT

6. NOISE/ELECTRICAL EFFECTS **Will the proposed action result in:**	**IMPACT**				**Can Impact Be Mitigated**	**Comment Index**
	Unknown	**None**	**Minor**	**Potentially Significant**		
a. Increases in existing noise levels?		X				
b. Exposure of people to severe or nuisance noise levels?		X				
c. Creation of electrostatic or electromagnetic effects that could be detrimental to human health or property?		X				
d. Interference with radio or television reception and operation?		X				
e. Other:						

7. LAND USE **Will the proposed action result in:**	**IMPACT**				**Can Impact Be Mitigated**	**Comment Index**
	Unknown	**None**	**Minor**	**Potentially Significant**		
a. Alteration of or interference with the productivity or profitability of the existing land use of an area?		X				
b. Conflicted with a designated natural area or area of unusual scientific or educational importance?		X				
c. Conflict with any existing land use whose presence would constrain or potentially prohibit the proposed action?		X				
d. Adverse effects on or relocation of residences?		X				
e. Other:						

8. RISK/HEALTH HAZARDS **Will the proposed action result in:**	**IMPACT**				**Can Impact Be Mitigated**	**Comment Index**
	Unknown	**None**	**Minor**	**Potentially Significant**		
a. Risk of an explosion or release of hazardous substances (including, but not limited to oil, pesticides, chemicals, or radiation) in the event of an accident or other forms of disruption?		X				
b. Affect an existing emergency response or emergency evacuation plan or create a need for a new plan?		X				
c. Creation of any human health hazard or potential hazard?		X				
d. ***For P-R/D-J, will any chemical toxicants be used? (Also see 8a)		NA				
e. Other:						

9. COMMUNITY IMPACT **Will the proposed action result in:**	**IMPACT**				**Can Impact Be Mitigated**	**Comment Index**
	Unknown	**None**	**Minor**	**Potentially Significant**		
a. Alteration of the location, distribution, density, or growth rate of the human population of an area?		X				
b. Alteration of the social structure of a community?		X				
c. Alteration of the level or distribution of employment or community or personal income?		X				
d. Changes in industrial or commercial activity?		X				
e. Increased traffic hazards or effects on existing transportation facilities or patterns of movement of people and goods?		X				
f. Other:						

10. PUBLIC SERVICES/TAXES/UTILITIES Will the proposed action result in:	IMPACT				Can Impact Be Mitigated	Comment Index
	Unknown	None	Minor	Potentially Significant		
a. Will the proposed action have an effect upon or result in a need for new or altered governmental services in any of the following areas: fire or police protection, schools, parks/recreational facilities, roads or other public maintenance, water supply, sewer or septic systems, solid waste disposal, health, or other governmental services? If any, specify:		X				
b. Will the proposed action have an effect upon the local or state tax base and revenues?		X				
c. Will the proposed action result in a need for new facilities or substantial alterations of any of the following utilities: electric power, natural gas, other fuel supply or distribution systems, or communications?		X				
d. Will the proposed action result in increased used of any energy source?		X				
e. **Define projected revenue sources		NA				10e
f. **Define projected maintenance costs.			X			10f
g. Other:						

Comment 10f. Maintenance costs would be minimal with successful establishment of a self-sustaining WCT population after the three- to five-year period of introductions. FWP anticipates that once established, the populations would become self-sustaining and would require no further maintenance with the exception of periodic electrofishing monitoring. This project would be part of the larger WCT conservation program in FWP Region 3, and would be primarily implemented by FWP, U.S. Forest Service and BLM staff dedicated to such efforts. The WCT conservation program is funded through state (FWP) and federal (FWS, FS, and BLM) dollars. As part of the Beaverhead-Deerlodge and Gallatin National Forest fisheries program, fisheries personnel from the FS will likely participate in some aspects of the project. Labor demands would be expected to be between three and six person/days (one person for one day) per year per stream for two to four years to complete the introductions and three person-days per year per stream in subsequent years to monitor the status of the introduced (three to five years), based on similar previous sampling efforts.

** 11. AESTHETICS/RECREATION Will the proposed action result in:	IMPACT				Can Impact Be Mitigated	Comment Index
	Unknown	None	Minor	Potentially Significant		
a. Alteration of any scenic vista or creation of an aesthetically offensive site or effect that is open to public view?		X				
b. Alteration of the aesthetic character of a community or neighborhood?		X				
c. **Alteration of the quality or quantity of recreational/tourism opportunities and settings? (Attach Tourism Report)			X			11c
d. ***For P-R/D-J, will any designated or proposed wild or scenic rivers, trails or wilderness areas be impacted? (Also see 11a, 11c)		NA				
e. Other:						

Comment 11c: Recreational opportunities to angle for wild, native trout will be increased as a result of this project. The fishless reaches of the proposed streams have adequate habitat to support a resident fishery which in turn could potentially support angling. The introduction of WCT to these streams would represent additional locations for anglers to catch wild trout even though these streams are not likely to support significant angling pressure because of their small size and remote nature. All of the streams proposed for WCT introduction are located on public property. Lost Creek in the Big Hole drainage is the only stream proposed for WCT introduction that is partially located on private property. The private landowners on Lost Creek have been contacted and have given their consent to WCT introduction.

12. CULTURAL/HISTORICAL RESOURCES Will the proposed action result in:	IMPACT				Can Impact Be Mitigated	Comment Index
	Unknown	None	Minor	Potentially Significant		
a. **Destruction or alteration of any site, structure or object of prehistoric historic or paleontological importance?		X				
b. Physical change that would affect unique cultural values?		X				
c. Effects on existing religious or sacred uses of a site or area?		X				
d. ****For P-R/D-J, will the project affect historic or cultural resources? Attach SHPO letter of clearance. (Also see 12.a)		NA				
e. Other:						

SIGNIFICANCE CRITERIA

13. SUMMARY EVALUATION OF SIGNIFICANCE Will the proposed action, considered as a whole:	IMPACT				Can Impact Be Mitigated	Comment Index
	Unknown	None	Minor	Potentially Significant		
a. Have impacts that are individually limited, but cumulatively considerable? (A project or program may result in impacts on two or more separate resources that create a significant effect when considered together or in total.)		X				13a.
b. Involve potential risks or adverse effects which are uncertain but extremely hazardous if they were to occur?		X				
c. Potentially conflict with the substantive requirements of any local, state, or federal law, regulation, standard or formal plan?		X				
d. Establish a precedent or likelihood that future actions with significant environmental impacts will be proposed?		X				
e. Generate substantial debate or controversy about the nature of the impacts that would be created?		X				
f. ***For P-R/D-J, is the project expected to have organized opposition or generate substantial public controversy? (Also see 13e)		NA				
g. ****For P-R/D-J, list any federal or state permits required.						See P 4: Permits

Comment 13a. There are no anticipated cumulative impacts related to the introduction of WCT to the proposed streams. The majority of documented fishless streams in the drainages proposed for WCT introduction will remain fishless as discussed previously. Streams will be further surveyed for the presence of rare and/or threatened or endangered invertebrate species prior to fish introduction. Consultation with the experts in the Natural Heritage Program will be conducted to determine the potential impacts on these species of WCT introduction if such species are encountered. The introduction would not take place if impacts are significant and cannot be mitigated. The overall impact should be minimal even though there are multiple small projects that may cumulatively add up to several miles of stream and what impacts may occur would be mitigated by leaving the majority of stream fishless. This project is part of a larger effort to restore WCT in the upper Missouri River drainage. Knowledge gained by either the success or failure of these proposed introductions would aid in the understanding of the species and its conservation to guide future efforts.

PART II. ENVIRONMENTAL REVIEW, CONTINUED

1. Description and analysis of reasonable alternatives (including the no action alternative) to the proposed action whenever alternatives are reasonably available and prudent to consider and a discussion of how the alternatives would be implemented:

   1) No Action Alternative

   The predicted consequences of the "No Action" alternative are (and beneficial outcomes that would not be achieved):

   - Approximately 40.2 miles of habitat suitable for WCT conservation would remain fishless.
   - Increased likelihood of losing WCT through hybridization, competition, and predation from non-native trout.
   - Potential loss of locally adapted WCT genetic traits if WCT populations are lost.
   - An opportunity to conserve "at-risk" WCT populations would not be achieved unless additional restoration projects that likely involve the use of piscicides are developed.
   - An opportunity to replicate existing WCT populations that may be secure but still threatened because of small size or other factors would be lost.
   - A potential source of genetically pure WCT that could be used to assist in additional WCT restoration efforts would not be established.
   - Creation of new fisheries that are on public property and accessible to anglers.

   Potential negative outcomes that would be avoided:

   - No costs associated with the introduction efforts. The tasks outlined above are part of FWP, Forest Service, and BLM fisheries personnel's normal work duty. Time not allocated to WCT introduction would be spent elsewhere, but there are no increased expenditures from the state for doing these projects.
   - No potential changes in aquatic invertebrate or amphibians communities as a result of fish introduction.

   2) Preferred Alternative: Introduction of WCT to Fishless Streams (proposed action)

   The benefits of successful establishment of WCT populations in the fishless reaches of these streams would include:

   - Conserving the non-hybridized population of WCT in the Big Hole, Madison, Gallatin, and Jefferson River drainages.
   - Conserving WCT populations that are on the brink of extirpation.
   - Replicating individual populations of WCT to reduce the likelihood of extirpation.
   - Increasing the stream miles occupied by genetically pure WCT

populations in the Upper Missouri River drainage by 40.2 miles.

- Establishing sources of genetically pure WCT in areas that are free from competition and predation from non-native trout
- Establishing sources of genetically pure WCT that could be used to assist in additional WCT restoration efforts through the collection of fish and/or eggs.
- Helping to achieve the management goal for WCT in Montana of long-term, self-sustaining persistence across the species historic range.

Potential negative outcomes of the preferred alternative:

- Potential aquatic invertebrate community changes as a result of fish predation. Impacts to aquatic invertebrates are anticipated to be minimal because across southwest Montana both fishless and fish-bearing streams have very similar invertebrate communities and often these species coevolved with fish for millennia.
- Potential tailed frog or western toad population impacts as a result of predation. Tailed frogs in streams considered for WCT introduction are limited in distribution to a few streams in the Big Hole drainage. Tailed frogs have coevolved with WCT and any impacts of fish introduction are expected to be minor. Western toads are not stream obligate breeders like tailed frogs and therefore, impacts would be minimal.

3) Establish Fish Barriers and Use Mechanical means or Piscicides to Remove Non-Native Trout Upstream of the Fish Barrier.

A practice that is becoming more widely used to conserve native cutthroat trout across the West is the construction of fish migration barriers and removing brook trout upstream of these structures. This alternative to conserving WCT in many instances has a better probability of ensuring long-term persistence because they often isolate more miles of habitat (greater than five miles) and result in larger, more resilient populations than introductions into fishless headwater streams. Non-native fish are often removed with either mechanical means (i.e., electrofishing) or an approved piscicide, such as rotenone, in order to restore WCT upstream of fish barriers. Identifying sites suitable for fish barrier construction can be difficult, and not all streams have suitable sites for such construction. Barrier construction is also expensive (more than $100,000), and it can take several years to obtain adequate funding to complete construction. Electrofishing removal of non-native trout has few impacts on non-target species, but the technique has limitations because of its effectiveness at capturing fish. Electrofishing removal is generally most effective in streams with less than three miles of occupied habitat, but it can take three to five years to complete. Piscicides are highly effective at removing fish from streams; however, they have unintended impacts on non-target aquatic invertebrates and some larval stages of amphibians. WCT would be reintroduced to the streams once a barrier is in place and non-native trout removed. This technique for conserving WCT is the most likely to result in the long-term persistence of the species and these sorts of projects are ongoing. Many of the WCT populations identified in this document are in peril of becoming hybridized by rainbow or Yellowstone cutthroat trout or

extirpated by non-native brook. If conservation actions are not taken immediately the populations may be lost. FWP recognizes that the small but secure populations that would be created under the Preferred Alternative would be vulnerable to natural disasters such as fire, drought, and floods. However, movement of WCT into these fishless reaches of stream provides the best potential means for short-term conservation of WCT as larger scale projects are developed.

Beneficial outcomes of Alternative 3:

- Creation of larger potentially connected stream systems with no non-native fish species present.
- Increased likelihood of creating WCT populations that will persist through time because there are more individuals spread out over more miles of stream.
- Creation of larger WCT populations in streams that anglers are more likely to fish and therefore catch WCT.

Potential drawbacks of Alternative 3:

- Barrier construction is often expensive (more than $100,000).
- Barrier construction requires specific geomorphology to be practicable, and such conditions are not present on all streams.
- It often takes several years (three to five) to develop, fund, and implement larger scale projects.
- Temporary impacts on non-target aquatic invertebrates related to the use of rotenone to remove non-native fish.

2. Evaluation and listing of mitigation, stipulation, or other control measures enforceable by the agency or another government agency:

None

PART III. NARRATIVE EVALUATION AND COMMENT

Addressed in Part I and Part II.

PART IV. EA CONCLUSION SECTION

1. Based on the significance criteria evaluated in this EA, is an EIS required (YES/NO)? If an EIS is not required, explain why the EA is the appropriate level of analysis for this proposed action.

No. An Environmental Impact Statement (EIS) is not required under the Montana Environmental Policy Act (MEPA) because the project lacks significant impacts to the physical or human environment based on the criteria described in 12.2.431 ARM. The impacts therefore are appropriately addressed through an Environmental Assessment (EA). The primary impact associated with the project is increased abundance and

distribution of WCT in streams in southwest Montana which will increase the likelihood of persistence of this native fish.

2. Describe the level of public involvement for this project if any and, given the complexity and the seriousness of the environmental issues associated with the proposed action, is the level of public involvement appropriate under the circumstances?

   The public will be notified of this EA through local newspapers and through contact with local sports groups and others who have previously indicated interest in similar projects. This EA will also be published on the Montana Fish, Wildlife & Parks web page (http://fwp.mt.gov/default.html). Public comments will be accepted for a minimum of 30 days. This level of public involvement is believed adequate for the proposed project, as similar and recent efforts in FWP Region 3 have produced no significant issues or controversy. A public open house to discuss the issues will be scheduled if numerous and substantive concerns are raised concerning this EA.

3. Public comment period and correspondence information:

   There is a 30-day comment period for this EA. Written comments can be mailed or emailed to the address below, and must be received by 5:00 pm, May 6, 2013.

   Jim Olsen
   Montana Fish Wildlife and Parks
   1820 Meadowlark Lane
   Butte, MT 59701
   Email: jimolsen@mt.gov
   Phone: 406-533-8451

4. Name, title, address and phone number of the person(s) responsible for preparing the EA:

   Jim Olsen
   Fisheries Biologist
   Montana Fish Wildlife and Parks
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   Butte, MT 59701
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REFERENCES

Allen, J. D., 1995. Stream Ecology—Structure and Function of Running Water. Chapman and Hall, New York.

FWP. 2007. Memorandum of Understanding and Conservation Agreement for Cutthroat Trout in Montana. Montana Fish, Wildlife and Parks, Helena, Montana.

Gerking, S. D. 1994. Feeding Ecology of Fish. Academic Press, San Diego, CA.

Leary, R. 2010. Genetic testing results letter dated April 12, 2010. University of Montana Conservation Genetics Laboratory, Division of Biological Sciences, University of Montana, Missoula, Montana 59812

Matthews, W. J. 1998. Patterns in Freshwater Ecology. Kluwer Academic Publishers, Norwell, MA.

Shepard, B. B., B. Sanborn, L. Ulmer and D.C. Lee. 1997. Status and risk of extinction for westslope cutthroat trout in the upper Missouri River Basin. North American Journal of Fisheries Management 17:1158-1172.

Shepard, B. B., B.E. May and W. Urie. 2003. Status of Westslope Cutthroat Trout in the United States: 2002. Montana Fish, Wildlife and Parks for the Westslope Cutthroat Trout Interagency Conservation Team, Helena, Montana.